

centre. A depression round which the distribution of wind force as compared with the prevailing gradient is unsymmetrical will move towards the region of "least resistance," i.e. the region where the winds are most conspicuously in defect. In identifying the region of least resistance the second principle is also used. It is based on the conception of "divergent" winds. Any wind which has a component directed away from a centre of low pressure is divergent for that centre, and as such marks a region of low resistance to its advance. Generally speaking, the greater the "divergence" the less the "resistance." Strong northerly or north-westerly winds to the eastward of a depression are looked upon as an extreme case of divergence, and as a sure sign of a rapid advance of the depression.

M. Guilbert proceeds to elaborate no fewer than twenty-five rules for forecasting which for the most part follow more or less directly from the two fundamental principles. Their application is illustrated by a large number of examples, taken mostly from cases when the forecasts issued by the Bureau at Paris proved incorrect.

So far as M. Guilbert is concerned, both principles must be looked upon as a direct result of the careful scrutiny of weather maps; they are entirely empirical, and no attempt is made to justify them from general dynamical considerations. Since the book has been in our hands, we have watched the charts published in the Daily Weather Report, and have noticed occasions on which the application of the first principle would apparently have been useful. On other occasions we have found difficulty in applying the rule. On many maps there are, within one and the same meteorological region, winds which are, some in excess, others in defect, of the normal. M. Guilbert gives no instructions as to how to proceed in such cases.

The principle of the "divergent" wind is not likely to be accepted without qualification in the form in which it is put forward. M. Guilbert insists very strongly that a single conspicuously divergent surface wind (observations on mountains or at high levels are expressly ruled out as not being comparable with the surface gradient) must be regarded as an almost infallible indication of the early advance of a depression. Objections based on the argument that surface winds are very liable to be influenced by local conditions are brushed aside. Among the examples quoted in the book there are many instances of surprisingly daring and successful predictions, some apparently *ex post facto*, others attested by stamped post-cards as being genuine forecasts made before the event. We are, however, entitled to ask whether the rules might not lead to equally daring but unsuccessful forecasts? Nearly 100 examples are quoted; the number is large, but so is the number of charts from which the selection is made, and it is to be supposed that M. Guilbert, whose style often suggests counsel's address to the jury rather than the judge's summing up, has picked out the cases which best illustrate his points. No doubt he could produce many more instances if called upon to do so, but the multiplication of selected examples does not carry conviction.

Before passing judgment we must hear counsel for the other side, who may be able to bring forward a similar number of cases at variance with the principles advanced. M. Guilbert has run up against the old difficulty of expressing his hypothesis in such a manner that it can be tested by an appeal to measurement. The relation between the observed wind velocity and the gradient should lend itself to numerical treatment, seeing that both quantities are the object of regular observation and measurement.

The book is accompanied by a preface by Prof. Bernard Brunhes, the director of the observatory on the Puy de Dôme, who acted as reporter on the occasion of the competition at Liège. In a supplement M. Brunhes points out that M. Guilbert's rules are consistent with the results deduced by Lord Kelvin and Bjerknes for the action of a steady current on a vortex, and describes some laboratory experiments of his own illustrating the phenomena.

MEDICAL EMBRYOLOGY.

Text-book of Embryology. By Dr. Frederick R. Bailey and Adam M. Miller. Pp. xvi+672. (London: J. and A. Churchill, 1909.) Price 21s. net.

THIS bulky volume is the third American text-book of embryology that has appeared in recent years. Like Prof. Heisler's work, of which a revised edition was published two years ago, it is addressed primarily to students of medicine and anatomy, being, in fact, based upon the course in embryology given at the medical school of Columbia University. Consequently it differs in its style of treatment from Prof. Lillie's "Development of the Chick," which is apparently intended for zoological students beginning embryology; and whereas Prof. Lillie confines his attention almost exclusively to a single type, and never passes outside the class Aves, the authors of the present volume, although dealing more particularly with human development, have aimed at treating the subject from a comparative standpoint, believing this to be the most efficient way of teaching it. With this opinion most teachers of biology must surely concur. It is satisfactory to note also that the physiology of the developmental processes is not entirely passed over. Thus, in an excellent chapter on the nervous system contributed to this volume by Dr. Oliver S. Strong, the author has been able to include much physiological matter which usually finds no place in a text-book of embryology.

In the second chapter a section is devoted to ovulation and menstruation and the relation which subsists between these processes, but it is to be regretted that the comparative method which is so successfully followed in other parts of the work is not extended to the problems dealt with here. That menstruation in the Primates is the physiological homologue of the proöstrum in the lower Mammalia, and that in the latter ovulation occurs normally during oöstrus, are now generally accepted facts, the recognition of which has removed many apparent difficulties which used to perplex the older writers.

Messrs. Bailey and Miller quote Leopold's observations, but they omit to mention that the later investigations of Heape, Sobotta, and others have thrown a new light on the subject. In this connection reference may be made also to the recently published memoir by Bryce and Teacher, whose conclusions in regard to the usual time for ovulation in man are in general agreement with those arrived at by investigators of the sexual processes in the lower Mammalia.

The authors state that the discharged follicle "becomes organised by ingrowth of vessels from the theca to form the corpus hæmorrhagicum" (p. 32). The latter name is more correctly applied to the follicle when it contains a blood-clot, as happens frequently (but by no means invariably) after ovulation, and the term is used in this sense on a later page (p. 413). The cells of the membrana granulosa do not actively proliferate before becoming luteal cells, as stated here (pp. 32 and 413), but undergo a process of simple hypertrophy. Cell-division in this layer is extremely rare after ovulation has taken place.

The authors lay due stress on the fact that the ovaries are ductless glands, not only physiologically and anatomically, but also developmentally. On a later page (p. 437) they make the statement that congenital absence of the ovaries may occur without defects in the other generative organs. We do not know on what authority this observation is cited, and in view of the fact that the uterus undergoes atrophy after ovariectomy (or remains infantile if the operation is performed in early life), the statement seems on the face of it unlikely.

The question as to the determination of sex is discussed at some length, and the recent observations of Wilson, McClung, Morgan, and Correns are referred to. Some of the older experiments on feeding caterpillars, tadpoles, &c., are also described, but the authors do not mention that the evidence derived from these has been to a large extent invalidated by the recent work of Cuénot, Kellogg, and others.

The book is divided into two parts, the first dealing with general development, including the development of the external form of the body, while the second is devoted to organogenesis. The sections at the ends of the chapters, treating of the origin of malformations and developmental anomalies, are a special feature. Moreover, there is a final chapter on teratogenesis, in which the views of Beard, Mall, and others are duly referred to. Suggestions for practical work, with descriptions of the necessary technique, are also included.

There are a few minor errors. For example, on p. 115, "Fig. 107" is a misprint for "Fig. 108," and on p. 416 "Girou" is wrongly written "Giron."

Among the more noteworthy omissions are absence of reference to the "phylogenetic law" (commonly but erroneously called the law of von Baer), excepting for a passing mention on p. 387, Miss Lane Claypon's work on the origin of ova from ovarian interstitial cells during adult life, Herring's researches on the development of the pituitary, and Gaskell's work on "The Origin of Vertebrates," which, with all its wealth of detail and illustration, morphologists

cannot afford to ignore. However, much valuable and important matter is included, and the volume as a whole forms a useful addition to the literature of medical embryology.

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FUNDAMENTAL PROBLEMS OF PSYCHIATRY.

Modern Problems in Psychiatry. By Prof. E. Lugaro.

Translated by Dr. David Orr and Dr. E. G. Rows.

Pp. vii + 305. (Manchester: University Press, 1909.)

Price 7s. 6d. net.

THIS translation will be welcomed by those who are interested in the study of mental disease, but have been unable to read the original Italian work. The book is intended to pass in review the chief fundamental problems which present themselves to the student of psychiatry. As the author states in his preface, the latter must be a man of extensive knowledge, since his study carries him into the most difficult branches of anatomy, physiology, pathology, psychology, sociology and even criminology. The author also hints that one object of his book is to justify the claim of psychiatry to a place among the sciences and by the side of general medicine, and to remove from the public mind the existing prejudice against the study of mental disorders. The work is, however, surely too learned a disquisition to engage the attention of an ordinary layman. We regret to find that the author himself draws a distinction between physicians and "alienists" (p. 71), as if so-called "alienists" were not physicians; yet we understand that even in Italy psychiatry is a well-recognised branch of medicine.

While admitting that it is still necessary at the present day to define clearly one's position in relation to metaphysical doctrines, we consider that Prof. Lugaro is too respectful to effete hypotheses of the nature of mind in devoting so much space to dismissing them. His final attitude is that he accepts the external world as an existing reality independent of our experience of it; while consciousness he regards as coinciding, perhaps identical, with experience; whether the experience be that of the philosopher, peasant, child or brute. This mode of regarding consciousness he designates "primitive realism."

The book as a whole strikes one as the work of a pathologist and anatomist with but limited clinical experience. The chapters on anatomical, physiological and allied problems should claim the attention of every asylum physician; those on pathogenesis and etiology are not so strong, but they repay perusal.

In the anatomical section the researches of Ramon y Cajal, Nissl, Brodmann and Vogt on the histology of the cortex are passed in review, but we note with regret that the excellent work of Campbell is not even mentioned. Similarly, in the physiological section we regard it as an important omission that no reference is made to Sherrington's researches.

Prof. Lugaro is a believer in the utility of hypotheses. "If a hypothesis starts from assured facts and involves no errors of reasoning, it has as much value as the observation from which it takes origin," and "even the observations on which it is based